

Editor's Note:

This paper was prepared between August and November 1991 in response to an instruction to the CIA by the House Permanent Select Committee on Intelligence (HPSCI) to establish a panel of outside reviewers to evaluate CIA estimates of Soviet economic performance.

SURVEY ARTICLE

An Evaluation of the CIA's Analysis of Soviet Economic Performance, 1970-90

***HPSCI Review Committee:*¹**

Daniel M. Berkowitz, University of Wisconsin-Madison

Joseph S. Berliner, Brandeis University

Paul R. Gregory, University of Houston

Susan J. Linz, Michigan State University

James R. Millar, George Washington University,

*Review Committee Chair**

It is generally understood that the mission of the CIA is to provide intelligence to the President, his administration and the Congress—data collection, analysis, forecasting and interpretive reporting. The product desired by the administration is, presumably, either the best available estimate (as opposed, for example, to a “worst case” scenario) or a range of outcomes to which probabilities are attached.

The committee was charged with an evaluation of the CIA's published work from approximately 1970 through 1990 with particular regard to the

*All members of the HPSCI Review Committee contributed materials to and participated in discussions that led to this report, and all take responsibility for the joint conclusions.

quality of estimates of Soviet GNP and rate of growth, the size and burden of Soviet defense expenditures, and U.S.-Soviet comparisons. The Review Committee was also charged with evaluating the CIA's appraisals of the prospects for change in the Soviet economy, especially their success in anticipating change following Brezhnev's death, and their accuracy in interpreting reform and its prospects. Finally, the Committee was asked to provide evaluation of CIA's interpretive reporting as it pertained to the Soviet Union.

Performance Evaluation

To evaluate the CIA's performance against a reasonable and objective standard, we selected the performance of academic Soviet specialists or, more generally, "best practice" methodology. Clients and the public may have unrealistically high expectations about just how good the CIA's reports and forecasts ought to be. Neither the CIA nor academic specialists were particularly percipient, for example, in anticipating the outcome of Gorbachev's policies of *perestroika* and *glasnost*. The research community as a whole failed to consider the collapse of communism as a possible scenario. If the CIA was expected to do a better job, then on this criterion the Office of Soviet Analysis (SOVA) failed, but we believe this is too strict a criterion. In fact, we believe that much of the criticism is based on twenty-twenty hindsight. In our view, the best that can be expected is for policy makers to be given a range of outcomes or a set of scenarios to which broad probabilities are attached. This allows policy makers to become aware of the various options and to prepare contingency plans accordingly. Such an approach is also more forthright about the difficulties of forecasting economic outcomes generally.

We conclude in general that the work of the Office of Soviet Analysis and its predecessors in the CIA has been professional and appropriately reasonable and cautious. While we find no indication of systematic misrepresentation, incompetence or carelessness, we have serious reservations about certain methodologies and reporting styles of the defense group.

Although the CIA did fail to predict the catastrophic developments in the Soviet economy at the end of the 1980s, it did begin to alert its clients to a serious and continuing slowdown in the Soviet economy and an increasing competition for resources much earlier. A 1977 report (ER 77-10436U), for example, predicted accurately that a reduced rate of economic growth was "inevitable" for the 1980s and would make it very difficult and possibly impossible for Moscow to pursue three traditional objectives of the leadership: (a) catch up with the U.S. militarily, (b) expand the industrial base steadily and (c) meet at least minimal consumer expectations for

improved living standards and welfare. Subsequent reports amplified this continuing problem. A 1979 report (ER 79-10131) forecast with impressive accuracy that the Soviet economic bureaucracy had "surprisingly little maneuverability" and would "be hard pressed to maintain growth at an average of 3 percent a year [for 1980-85]." Reporting again in 1981 (ER 81-10009), the CIA stated that the resource crunch was becoming so great that "something has to give." Most reports through 1988 on the course of Soviet GNP and on general economic developments were equally satisfactory: accurate, illuminating and timely.

In fact, we find it difficult to believe that anyone who has read the CIA's annual public reports on the state of the Soviet economy since 1975 could possibly interpret them as stating that the Soviet economy was "booming." On the contrary, these reports regularly reported the steady decline in the Soviet growth rate and called attention to the deep structural problems that pointed to continued decline and possibly to stagnation. As early as 1982, SOVA analysts were evaluating the potential contribution of the conversion of defense plants to civilian production as a means to offset economic decline (Sov 82-10101). SOVA also monitored closely the internal Soviet debates on economic reform and correctly predicted that the Brezhnev government would not undertake the kind of radical economic transformation required to restore vigor to the economy (Sov 82-10068). Andropov was described as committed to "continuity and moderation" (Sov 83-10115), and Gorbachev was correctly identified early on as a determined reformer (Sov-85-10165). What remained unknown and perhaps unknowable, was whether the Soviet economy was reformable.

The review committee does believe, however, that the performance of the CIA can be improved and, just as importantly, that recent changes in the Soviet Union and Eastern Europe require a respecification of the tasks SOVA should be asked to carry out. We also believe that steps need to be taken to integrate SOVA's work with that of other national and international agencies which now have responsibility for following Soviet developments.

Our most significant critical conclusion is that certain CIA products during the 1970s and 80s may indeed have tended to overstate the size of the Soviet economy relative to the U.S. and, particularly, its military threat. The CIA's main quantitative research reports during these years may be divided into two broad categories: (1) direct measurement and evaluation of Soviet economic capacity and performance and (2) comparisons of Soviet and U.S. production capacity and economic performance. In our view, most of what is legitimate in recent criticism of the CIA springs from the comparative work. That is, if the CIA had confined itself to the analysis of Soviet economic and military performance over time and refrained from

comparative assessments, the CIA's reports might very well not have generated the current controversy. It is the review committee's conviction that the U.S.-Soviet comparisons, say of size of GNP and dollar-volume military expenditures, rest on questionable methodological foundations, and yet these measures apparently have had great intuitive meaning and thus influence with clients and the public alike. Whether or not this contributed to an excessive and unnecessary U.S. military buildup is not a matter the review committee is qualified or has the resources to address.

Finally, we believe that an opportunity exists today, thanks to the dramatic developments in the Soviet Union over the last several years, for the CIA to reorganize SOVA. We recommend a reconsideration of SOVA's functions in the light of the activities of the World Bank, the IMF, the UN, the OECD and the EBRD which are now involved in measuring and appraising Soviet economic performance. There may even be opportunities for SOVA analysts to work directly with Soviet Union and republican agencies. Moreover, there is a clear need to draw analysts into SOVA who are sophisticated in economic modelling and in a wide variety of institutional and other qualitative forms of analysis.

Measures of Soviet GNP and Consumption in Rubles

The CIA's estimates of Soviet GNP in rubles are based upon an adjusted factor cost (AFC) standard pioneered by Abram Bergson and his students in the 1950s. With the exception of the defense expenditure component, these estimates are based predominantly upon open sources. The methodology underlying the estimates has been presented periodically to the scholarly community for review, criticism and recommendations. There has been very little criticism of this work, and CIA estimates have been accepted as authoritative throughout the world, including the Soviet Union. Recognizing that AFC estimates do not take into account variation in hidden inflation rates across sectors and do not reflect differences in capital productivity, the end-use and sector-of-origin breakdowns have proven invaluable for analysis.

Consumption in rubles is derived from the GNP estimates. There has been little criticism of these numbers. Their main value is in providing a sense of consumption's share in GNP as a basis for speculation about welfare, morale, incentives and so forth. Neither the GNP nor the consumption estimates, however, include "second economy" activities. While the committee realizes that routinely providing estimates of the size and scope of second economy activities would have been impossible, some assessment of its impact, even if speculative, was warranted. Such an evaluation

would also have served to lay the foundation for analysis of the impact of the growing cooperative and commercial sector activities in the late 1980s.

SOVA should emphasize in its future publications that its Soviet GNP figures measure, at best, production potential. Unlike GNP measures in market economies where economic activity is guided by decisions by firms and households that enhance their material well-being, Soviet GNP measures summarize aggregate production activities regardless of whether the goods produced satisfy demand. The literature abounds with descriptions not only of excess inventories of producer and consumer goods, but also of a growing level of unfinished construction. To date there has been no way to calculate a measure of Soviet GNP that would be a more satisfactory measure of social welfare. A welfare-based measure of GNP and its components would provide a much more satisfactory basis for the analysis of welfare implications and as a predictor of political developments. If the Soviet economy is producing heavy machinery that no one needs or wants, the capacity to do so is recorded in the factor-cost adjusted evaluation of production potential, but this clearly overstates the welfare content of such products. Recent developments in the Soviet Union may make it possible to use market prices in GNP calculations. Current data collection and measurement activities by international (and Soviet) agencies may indeed make the CIA's effort to measure GNP and its components redundant.

GNP Growth Rates

SOVA calculates GNP growth rates using a time series of samples of physical production. The data are weighted by share in the base year's GNP. Data limitations and method have been explained fully in open publications.

The main findings have stood the test of time quite well. The series shows relatively rapid growth, but at a declining rate between 1965 and 1975. The rate of growth continues to decline from 1976 through 1985, failing to approximately 2% per year in the later years. The picture presented by SOVA figures is of a once vigorous economy becoming increasingly sluggish for two main reasons: (a) continued reliance on extensive growth because of systemic barriers to technological progress and (b) poor investment decisions. Thus, the leadership of the 1980s was faced with difficult choices posed by the rising demand for both guns and butter in a period of declining economic growth.

SOVA's growth estimates have been challenged from two directions. Michael Boretsky argues that the use of physical time series understates quality improvements in Soviet products and therefore understates the rate of growth. The implication is that the Soviet economy was, say in 1980,

larger and stronger than the CIA reported. The committee agrees with the CIA's response to Boretzky, namely that SOVA did take quality changes into account where possible. While there may have been some quality change for which adjustments were not made, the understatement is unlikely to have been substantial. Any attempt to adjust further for quality change would require subjective and nonreproducible evaluations.

The other challenge is from recent estimates by Soviet economists, notably Gregory Khanin. His work was given great publicity at an American Heritage conference which, in turn, served as one stimulus to public criticism of the CIA's products. A subsequent academic conference convened by the CIA examined the issue. We concur with the conclusions of that conference: Methodologically, Khanin's approach is naïve, and it has not been possible for others to reproduce his results. Until more detail is available, Khanin's results cannot be regarded as serious competition to CIA GNP estimates.

SOVSIM Modeling

SOVSIM represents one of the first attempts to set up an econometric model of the Soviet economy.² SOVSIM portrays a "supply-oriented" centrally planned economy. Thus, binding resource constraints such as energy and labor are critical. There is no accounting for technical progress based on endogenous factors such as learning by doing, consumer satisfaction, investment in human capital, or improvements in the capital vintage profile. The model also does not provide for optimizing behavior by planners, and the structural parameters are exogenously determined. Finally, no provision is made for structural change over time.

For these reasons, the SOVSIM model is not useful for analyzing or projecting current developments in the Soviet Union, and we recommend termination of SOVSIM modelling. The committee believes, however, that the model was useful during the Brezhnev years (the "period of stagnation") precisely because structural change was so slight. The model predicted with impressive accuracy that there would be serious problems by 1985.³ In particular, given falling oil production, it was predicted that there would be a slowdown in growth and that the Soviet Union would be obliged to reduce the export of petroleum to Eastern Europe at subsidized prices. The model predicted also that, without improvements in oil production techniques or substitution by natural gas, the Soviet Union would be obliged to import oil from the West, with a resulting hard currency crunch. These projections were not precisely correct but, in hindsight, seem to the committee to have been useful predictions⁴. Certainly, they do not suggest a

healthy outlook for the 1980s. Moreover, had SOVA used a range of scenarios, the prediction would have bracketed the actual outcome.

In a period of rapid structural change it would be good to see more institutional and theoretic analyses of the engines of growth. In particular, since so much of the high-level physical and human capital is concentrated in the Machine Building Metal Working Sector, could this sector provide spillovers to other sectors if the wall of secrecy comes down? To what extent have defense expenditures driven Soviet economic growth? Will the private sector provide an engine of growth, or will its growth along with the consequent decline of the state sector retard growth prospects? These are the kinds of questions which need to be addressed in a period of rapid structural change, and the modern theory of endogenous economic growth would seem to be highly relevant too.

SOVA has had an inclination to present numbers unaccompanied by in-depth interpretive analysis. It is a lot easier to crunch numbers than to analyze qualitative, structural or organizational change. Generally lacking in SOVA reports is the use of microeconomic analysis: principal/agent models, transactions costs analysis, or a property rights framework, for example, as a means for evaluating the information collected. There is the distinct need in SOVA for more individuals with professional experience and depth. To attract such scholars, SOVA would need to create conditions (less secrecy, more publication opportunities, more open interaction with other government departments and agencies, peer review, and so forth) that would attract more highly qualified analysts.

SOVIET-U.S. Comparisons

Quantitative comparison of economies is an inexact science, with results that are highly sensitive to the method used. SOVA's Soviet-U.S. GNP comparisons are based upon the calculations of price ratios that reflect "purchasing power parity" (PPP) exchange rates, which is best practice methodology. The result is a comparison of the relative size of the two economies in either rubles or dollars for any given year. SOVA publications do point out the limitations and qualifications of the methodology: the results tend to overstate the dollar-value of Soviet GNP and to understate the ruble value of U.S. GNP because (1) the higher quality, (2) the greater durability and (3) the greater degree to which U.S. machinery products are customized (that is, produced in smaller runs) are not reflected in the PPPs.⁵ No adjustment for these biases are apparently deemed feasible, which cannot but severely limit the usefulness of the comparison.

Two other interpretive problems that SOVA has not stressed adequately, in our opinion, have contributed to public criticism of SOVA's conclusions. First, SOVA's measure of Soviet GNP is a measure of production potential, not of social welfare derived from production. Moreover, U.S. prices reflect not only domestic well being, but world-market competitive conditions as well. The value of Soviet output in U.S. prices, therefore, overstates the (world) market value of Soviet GNP.

The index number problem poses a second source of possible misconstruction of SOVA's GNP comparisons. As SOVA clearly states, for example, estimates of PPPs for investment expenditures in U.S. weights yields a higher ruble-dollar ratio (0.63) than Soviet weights (0.40). A similar relationship obtains for GNP comparisons. This is a well-known problem of which SOVA is well aware. The review committee, however, is critical of the fact that SOVA elected to present its GNP comparisons as a single-valued geometric average. We believe that it should have resisted any pressure to simplify its results in this way and should instead have presented at all times both the ruble and the dollar comparisons. To report that the average ratio of Soviet to U.S. GNP was 60.4% in 1976 implies a degree of precision much greater than a report stating that the ratio is 49.5% when measured in rubles or 73.8% when measured in dollars. In any event, all members of the committee agree that no one of these numbers by itself conveys the information that is supplied by all three. In this respect, it should be emphasized that the relative size of the Soviet and U.S. economies is not a single "knowable" number. Inherently, there is more than one answer to the question of size because one cannot exclude either set of weights on *a priori* grounds.

Despite the limitations noted, SOVA's comparison of Soviet and U.S. GNP for 1960-83 looks quite good in retrospect if viewed as a measure of trends.⁶ We would argue in hindsight that as a measure of social well being the numbers are too high. However, the trend is correct and a valuable finding.

Comparisons of Soviet-U.S. total and per capita consumption raise similar methodological issues. The 1981 comparison of Soviet and U.S. consumption by Gertrude Schroeder and Imogene Edwards ("Consumption in the U.S.S.R.: An International Comparison") merits special mention in the opinion of the review committee. The study was modelled upon the International Comparison Project (IPC) that was developed by Irving Kravis et al. under sponsorship of the World Bank and the UN. Schroeder and Edwards compare Soviet and U.S. consumption levels in 1976 by using a sample of 334 goods and services. The study matches U.S. and Soviet products and develops a "binary comparison of per capita consumption of

goods and services of a quantitative nature, resulting from valuation of both countries' consumption in 1976 dollars and rubles and taking the geometric mean of the comparison in dollars and the comparison in rubles."

Methodologically, there are some unavoidable problems with this approach. It is difficult to do a binary comparison when there is much variety in the U.S. and so little in the U.S.S.R. Items that are identified as "matches" are likely to be more representative of the Soviet than the U.S. product mix. As the study noted, the fact that high quality and thus high-priced U.S. products are thus likely to be excluded, for example, tends to bias the results in favor of the U.S.S.R. Further, the Soviet Union is a sellers' market, which means that rubles do not have the claim on goods that dollars have in the United States. Finally, it is not clear why a geometric mean is used. Indeed, it would be valuable in our opinion to explore the causes of the large difference that obtains between the ruble and dollar measures.

Despite these problems, we believe that the study is very valuable. The authors are careful to point out the limitations of their methodology. An important conclusion of the study is that as of 1976, real per capita consumption in the U.S.S.R. was 34.4% of that in the U.S., and the lag in consumer and household services was massive. We conclude that a careful reading would tell a policy maker that the Soviet economy was in trouble already in 1976.

Measures and Comparisons of Soviet Defense Expenditures

In the estimates of GNP, the bulk of the data are taken from published Soviet sources, and the agency presents its raw data and its methodology in great detail. Its findings are therefore subject to evaluation by independent analysts in a manner fully consistent with the highest scholarly standards. Defense estimates, however, are derived from highly classified sources. The CIA publishes the findings, but presents only a general account of the kind of data and the methods used to obtain its results. Except by invitation, outside analysts cannot scrutinize the basic data or assess the estimating procedures in detail. Thus, the findings can be assessed by the profession at large only by an evaluation of the reported methods of estimation and by their broad consistency with better understood economic data. The results of reviews that have been commissioned by the CIA have not been widely disseminated and are generally not part of the public scholarly domain. The defense estimates must, therefore, be regarded as much more speculative than the GNP estimates and, therefore, more subject to controversy.

Our assessment focuses on four aspects of the defense expenditure estimates: method of estimation, coverage of defense-related expenditure,

calculation procedures, and presentation of results. We deal primarily with defense procurement estimates; the estimation of current operations and RDT&E is not discussed here.

Method

Since Soviet national income reporting could not be trusted to provide a full measure of total defense expenditures, some indirect method had to be developed. Two approaches predominate. One is to rely on published monetary aggregates (on value of industrial production, for example) and to try to cull out of those figures the unknown proportion that consists of defense items (for example, the value of weapon systems in the total of industrial production). The other is to collect data on the production of weapons and then to evaluate the physical production data at the prices that the military purchaser pays for its procurement. The CIA uses the latter method, usually called the "building block" approach.

Each method has its merits and demerits, which have been explored and debated at great length for decades and have long been quite fully understood. In our judgement the balance is in favor of the building block method. Flawed as it is, there has never been a strong case for the CIA to abandon it because no clearly superior alternative has been discovered.

One disadvantage is the uncertainty associated with the building block method for certain products. It is difficult, for example, to estimate the production rate of some weapons from such evidence as satellite photos of freight car loadings or manufacturing floor space. In these cases there is undoubtedly a large element of subjective judgement required. The procedure does, however, work well with large items such as ships. It also offers a source independent of Soviet official data. On balance, we guess that the method is more likely to undercount than to overcount, implying that the CIA defense estimates may be too low. We can make no judgement on the order of magnitude, however, nor on the importance of this matter relative to the many other sources of bias.

Current changes in the U.S.S.R. may make it possible to obtain more direct and reliable information in the future. We recommend that the CIA explore with the Soviets ways of exchanging defense information that might render the building block method obsolete. It may also be possible to work more closely with Soviet scholars (Sergei Rogov and Andrei Kortunov, for example) who are calculating Soviet defense expenditures in both defense rubles (\$1 to 1 defense ruble) and civilian rubles (\$0.03 to 1 civilian ruble). For the next several years, however, it would be desirable to continue the annual estimation procedure in order to be able to detect changes in

military spending on the basis of this long time series produced with a standardized methodology.

Coverage

The agency distinguishes three concepts of defense expenditures. One is the U.S. concept, consisting of those items that are classified as defense under U.S. budgetary procedures. The second is a "Soviet" concept, comprising a somewhat larger set of activities in the U.S.S.R. It includes such items as logging and roadbuilding by troops, internal security forces, and civilian space activities. It has been the practice to present two estimates, one for each of these two concepts. The difference between the two estimates has ordinarily been about 1% of GNP.

Critics have pointed out that even the broader concept does not fully capture the extent of militarization of Soviet society; for example, civil defense, strategic reserves of grain and petroleum, and so forth. Some of the charges that the CIA understates Soviet defense expenditures derive from consideration of this third concept.

There is some justice, therefore, in the claim that the CIA's usual coverage of the first two concepts misses some defense-associated expenditures and is, therefore, too low for some analytic purposes. Considering this third concept, the full defense burden may, therefore, be greater than reported. Because of data limitations, however, and in the interest of minimizing subjectivity in the calculations, we think the agency is correct in sticking to its usual practice with respect to coverage.

Calculations

While we endorse the CIA's choice of method and of concept of expenditure, we have found a great deal to criticize with respect to the calculations. Given the time constraints under which the review committee worked, we found it impossible to obtain an unambiguous understanding of the methodology and procedures followed in the calculation of defense expenditures. It was not clear from the available readings, for example, that the base year figures have been revised annually so that in fact there are no true base year prices and quantities in the defense expenditure calculations. While this procedure was clarified for us by SOVA analysts responsible for preparing the defense estimates, the implications of this estimating procedure on estimates of the defense burden and threat remain elusive. In short, we found a number of anomalies, which we failed to clarify from either the written documents or in our discussions with SOVA defense specialists.

Our doubts came to the fore in our effort to assess the various major revisions that the CIA has made in its estimates over time. In a number of important cases, revision led to an increase in estimates of the defense burden, when one would have expected, on theoretical and other grounds, that the estimated burden should have decreased.

The estimating procedure is exceedingly intricate, and in the time available to us we were unable to assess the theoretical underpinnings of the procedure, or to assess the sources of error that might be expected at each of the several steps in the process. In the end we came away impressed with the ingenuity of the effort to find a systematic way of estimating a mass of unknown information from a small body of known information. Because of the many assumptions and estimates that have to be made along the way to get the method to work, however, there are many sources of possible error in the final estimate of military expenditures. We are concerned that, in the absence of a reliable independent check, the estimate could be wildly wrong without our having any way of knowing so.⁷ More specifically, consider the following three revisions:

The 1981 Revision. In the 1980 Hearings before the Joint Economic Committee, the CIA reported the 1979 defense burden as "12 to 14%" of GNP. As in all preceding years, the burden was presented as a two-percent range. There was a clear explanation that the "lower band" represented the U.S. definition of defense and the "upper band" represented the somewhat broader Soviet definition.

In the 1981 Hearings, however, it was reported that the defense burden had risen from its earlier level of "12% to 13%" to a higher (1980) level of "13 to 14%." No indication was given that the agency had shifted from a two-percent range to a one-percent range in reporting the burden, nor was any explanation given for the change.

The review committee has since learned that the CIA had decided in 1981 to stop reporting the (lower) U.S. definition of defense and to report only the Soviet (higher) definition of defense, as they have been doing ever since. They point out, correctly, that the Soviet definition is more relevant to the assessment of the cost of defense to the Soviet economy. But since the political debate inevitably leads to a comparison of how much the Soviets are spending compared to how much we are spending on defense, dropping the U.S. definition results in relative exaggeration of the Soviet burden. Moreover, the introduction of the change in definition without informing Congress that there had been such a change, and what its significance was, strikes us as a very bad reporting technique. We believe that this episode contributed to the public impression that the CIA was presenting its figures in such a manner as to give an exaggerated impression of how Soviet defense

expenditures were changing. We recommend that both concepts be presented separately, in the form of moving averages. Reflecting best practice methodology, reporting moving coverages would improve the clarity of the report and offer a less arbitrary method of smoothing year-to-year variations.

The 1983 Revision. During the years 1976–81 the CIA reported defense spending to have grown at “about 4–5 percent per year” (1981 Hearings). In 1982 it reported that defense spending had been rising at an annual rate of 4% “that had prevailed since the mid 1960s” (1982 Hearings). Then, in the 1983 Hearings, the CIA announced that, on reviewing the accumulated evidence, the 1976–81 estimates had been too high. The growth of defense expenditures had in fact slowed down substantially after 1976. Instead of the 4–5% per year they had been reporting since 1976, defense spending had grown at only 2% per year. However, because GNP growth had slowed down along with defense growth, the defense burden “remained roughly constant at 13–14% through the 1970s.”

Many questions have been raised by this major revision. We consider only two. First, the defense burden for 1965–75 had for many years earlier been reported as 11–13%. The 1983 Report states, however, that the defense share “throughout the 1970s” remained constant at 13–14%. It was not evident why the revision of the 1976–81 defense spending estimates should have caused the burden estimates for 1970–76 to have been revised upward from 11–13% to 13–14%. We were informed that the change resulted from revisions in both base year prices **and** quantities that were not adequately explained by SOVA in response to outside challenges. The defense share estimates have been confusing because it was not clear to most outside observers that the entire time series is recalculated each year. We are sympathetic to this unusual procedure, given the objective, but we believe that it could have been explained much more simply than has thus far been the case.

Second, it would seem that if the growth rate of defense spending had been overstated during the years 1976–80, the burden must also have been overstated. That is, if a numerator (defense spending) is reduced but a denominator (GNP) is unchanged, the ratio (defense burden) must be smaller. In the 1983 Hearings, however, the reported burden was not revised downward. We were informed that defense burden estimates were recalculated after concluding that earlier defense expenditure estimates were too high. The burden did not change, it was claimed, because GNP growth was falling at the same time that defense growth was falling.

Using test calculations based on the CIA’s pre-revision and post-revision figures, we were unable to obtain a Soviet defense burden in the range reported by the CIA in 1983 (13–14%) for any reasonable value for the rate

of growth of GNP for 1976 to 1981 (which the CIA reported in the 1982 Hearings as 3.1% per year). We find the 1983 assertion that even after revision the burden remained 13–14% inconsistent with the CIA's own earlier reported figures. There may be an explanation for the apparent inconsistency, but we have not been able to ferret it out. The persistent inability of the CIA to explain this apparent discrepancy has further contributed to doubts about the candor of their reporting on defense matters.⁸

The 1986 Revision. The GNP and defense estimates before 1982 were valued at the prices of 1970. In 1982 the Soviets introduced a general price revision. The prices of 1970 had become increasingly unreflective of production costs in the years after 1970, and, following standard procedure, the CIA reevaluated both its GNP and defense estimates at the more meaningful prices of 1982.

There is a solid body of economic theory leading one to expect that when a growth rate is evaluated at the prices of a later year it will prove to be smaller than when it is evaluated at the prices of an earlier year. In fact, most of the CIA's results conform to this theoretical expectation. GNP, for example, grew at 3% per year at 1970 prices, but only at 2.6% at the new 1982 prices.

However, the revised defense burden turns out to be higher at 1982 prices. Instead of the 13–14% reported for earlier years, the revised, 1982-price-base estimate jumps to 15–17%. We consider this a surprising result as yet inadequately explained by SOVA's defense specialists. If the revised base prices do in fact measure true factor cost, then the burden of defense should decline in normal expectation. We suspect that the increase is an artifact of the method of estimating 1982 prices and/or making 1982 factor cost adjustments.

We believe that the poor reliability of the defense share estimate raises a serious question about its usefulness and recommend that SOVA consider avoiding the calculation and publication of the numbers until more reliable numbers are available. In principle the size of the military burden is of interest because it provides a measure of how much the defense effort is costing, and therefore how much it is crowding out the alternatives of consumption and investment in the U.S.S.R. In practice, however, virtually none of our analysis of Soviet policy depends on knowing the precise size of the burden. All one can assert is the self-evident proposition that the higher the burden, the harder it is for them to sustain their defense effort. Nobody's forecast of the Soviet Union's ability or intention to sustain its military effort would be different if the burden were 15% than if it were 10% or 20%; we simply don't know enough about the minds of the leadership or of the population to make such distinctions. We, therefore,

recommend that much less effort be devoted to the estimation of military expenditures, because cruder estimates with even a larger margin of uncertainty would be adequate. We also recommend that a burden estimate not be presented at all, on the ground that the estimate is extremely rough and that it contributes very little to the further understanding of the Soviet military threat. What is more, SOVA's estimate of the burden has limited relevance for understanding the military burden as Soviet leadership views it. Presumably, a current ruble estimate would be the most appropriate measure.

Finally, it should not be inappropriate for an intelligence agency to acknowledge that some information it would like to have is simply not available. That acknowledgement might be conveyed by a statement such as the following: "We have full confidence in our information on Soviet defense production, but the data available to the U.S. intelligence community are, in our opinion, insufficient to support any reliable estimate of Soviet defense spending by any known method of estimation."

Presentation. The CIA findings are thought to have had strong political repercussions, particularly in debates on what the proper level of U.S. defense expenditures should be. Although this is perfectly proper in a democracy, it serves as a powerful reminder that the findings should be reported in a way that would contribute to the most informed political judgement and public debate. The CIA cannot be held responsible for misinterpretation or misrepresentation of its findings, but it does have the responsibility to present its findings in a way that would minimize the likelihood that such things will occur.

We have found that the CIA's reporting of its findings on Soviet GNP and on general Soviet economic development has been satisfactory. With regard to the CIA's findings on defense expenditures, however, we believe that the CIA presented their results in ways that contributed to misinterpretation and misrepresentation. For the most part, the effect of the form of presentation was to magnify the Soviet military threat to a level not warranted by the CIA's own findings.

Three cases will serve to illustrate the basis of our judgement. First, there is a sharp distinction to be drawn between the magnitude of the Soviet military threat and the level of Soviet defense expenditures. The magnitude of the military threat is fully conveyed by the CIA data on the size and quality of the Soviet armed forces. What share of GNP is required for the Soviet Union to mount that threat in no way affects the magnitude of the current threat; it relates at best to strategic issues. In fact, for a given magnitude of threat, the more the Soviets have to spend to support it, the stronger the position of the U.S., for it means that the Soviets are hurting more.

From this perspective, much of the huge effort in which the CIA has engaged to evaluate Soviet defense expenditures has not been worth the while. The vital information lies instead in the evidence obtained by covert and other means for assessing the Soviet order of battle, its command and control capacities, and other evidence of a military nature. In the CIA's annual reporting it is that evidence that should be presented as its main contribution, for that is the basis on which our own defense effort should be based. Presumably this was the case in the CIA's classified briefings. But the estimates of Soviet defense spending occupied the center of the public debate, deflecting attention there from the military threat itself. We do not know how the public debate may have influenced the private discussions as feedback. If the problem is one of classification, we believe the public debate is sufficiently important to warrant a change in policy.

One example of the consequence, cited by Professor Franklyn Holzman, is the public response to the first major revision of the CIA's defense estimates. In 1976, as we reported above, the CIA announced that its earlier estimates of the Soviet defense burden had been based on prices that they subsequently learned were incorrect. Using the new, corrected prices, their recomputation produced an estimate of the defense burden of 11-13%, instead of the 6-8% that had reported in the past. To be sure, the CIA explained that both estimates were based on exactly the same number of planes, ships, and so forth; only the prices were different. Nevertheless the attention given to that huge increase in reported defense expenditures caused President Nixon to write: "Thanks in part to that intelligence blunder, we will find ourselves looking down the nuclear barrel in the 1980s."

Perhaps the CIA should not be held responsible for that kind of misinterpretation. But we believe it could have reduced the impact of its defense expenditure findings by directing less attention to them and by more diligently hammering away at the irrelevance of the spending figure for the assessment of the current military threat.

Second, in addition to its reporting of defense expenditures as a percentage of GNP (the burden), the CIA also regularly reported Soviet defense expenditures as a percentage of U.S. defense expenditures. Like the defense burden estimate, the comparative spending estimate deflects attention from the crucial question of the size of the military threat.

Moreover, in preparing the estimate, the CIA frequently chose to report Soviet defense spending in dollars. Everyone engaged in the international comparison business knows that using dollar prices will show Soviet expenditures, whether on guns or butter, to be a larger proportion of the corresponding U.S. expenditures than if the comparison were made in rubles.

To avoid this upward bias, the common practice is to prepare two such estimates, one in dollars and one in rubles. If a single final estimate is required, the usual compromise is to report the average of the dollar estimate and the ruble estimate, although some dispute the meaningfulness even of this number.

This accepted procedure is well-known to the CIA analysts, and it is indeed the procedure sometimes followed in reporting comparative GNP estimates. But in presenting comparative defense expenditures, the CIA reports have tended to emphasize the upward-biased dollar estimates and not the downward-biased ruble estimates or the average. The consequence is that the public image of the magnitude of Soviet defense spending relative to the U.S. was higher than it would have been if generally accepted best procedure were followed. We, therefore, applaud information that the CIA has ceased reporting comparative defense spending in dollars. However, if requests for comparative spending cannot be denied, the CIA should follow the standard practice of reporting both the dollar estimate and the ruble estimate.

Third, virtually all the CIA comparative defense reporting juxtaposes the Soviet Union and the U.S. If the objective is to provide the best evidence regarding the military threat, however, the most appropriate subjects of comparison should have been NATO and the Warsaw Pact. That form of reporting would be better for many reasons. The main reason is that, in our strategy for meeting the Soviet military threat, it was not U.S. military forces alone on which we counted but also the substantial forces of our NATO allies. A second reason is that in seeking to understand Soviet strategy, the U.S.S.R. should have been seen as facing not only U.S. military forces but those of Germany, Britain, and the other allies, including France in most circumstances. We are aware that the CIA did indeed publish one classified document comparing NATO and Warsaw defense activities. The introduction states that it was to be the "first" such study (Sov 87-10077). It gives a significantly more balanced picture of the Soviet military threat than that which emerges from the U.S.-Soviet comparison alone. Unfortunately, no subsequent studies have been undertaken so far as we know.

We believe that by focusing on the U.S.S.R.-U.S. comparisons rather than on NATO, the great weight and authority of the CIA has served to bias the public debate on U.S. defense policy. Had greater attention been directed toward NATO-Warsaw Pact comparisons, the magnitude of the Soviet military threat would not have appeared as large as it appeared from the U.S.S.R.-U.S. comparisons alone.

Interpretive Reporting

Apart from reports on defense expenditures, the review committee has formed a generally favorable opinion of the quality of the CIA's interpretive reports on the Soviet economy. CIA's reports on the growth of GNP and its components (excepting the defense component) during the 1980s were generally accurate and informative. We believe that the CIA's clients received timely and reasonably accurate information also on the slowing rate of growth and the increasingly tough allocation decisions that Soviet leaders would face in the resulting resource crunch. There were, however, some significant "misses" too. Most significantly, the CIA failed to foresee that perestroika and glasnost and certain policy blunders would lead to the sharp decline of the economy and to the breakup of the Soviet Union at the end of the 1980s. The question we explore in what follows is just how good were the CIA's interpretive reports relative to those of the profession of Soviet specialists at large?

The short answer is that the CIA was not significantly better or worse than academic specialists. Both academic and agency analysts had mixed records, and the bottom line reveals that neither anticipated the intensity of potential ethnic separation or even considered the possibility that the communist party would lose legitimacy completely and that the Soviet political and economic system would disintegrate. It perhaps should be said that neither did Gorbachev and his advisors.

It needs to be underscored at the outset that the actual course of events between 1988 and 1990 in the U.S.S.R. was, even in hindsight, a low probability outcome. The problem for forecasters is that low probability events do nonetheless occur, and there is an indefinite number of low probability outcomes to consider. No forecaster can represent such possible outcomes as anything other than as of low probability. This offers no basis for criticism and illustrates the review committee's preference for scenario style analysis of a range of possible future events of differing likelihoods, for it allows policy makers at least to consider the ramifications of several low as well as high probability outcomes.

Regarding the CIA's success in forecasting, the 1977 analysis of trends and prospects (ER 77-10436U) is an impressive piece of analysis. It correctly identified 1976 as a critical inflection point in growth trends and projected accurately the potential long-run consequences of the slowdown. Several subsequent studies, notably two in 1981 (ER 81-10009 and ER 81-10023), elaborated this theme helpfully. The report entitled "Soviet Perceptions of Economic Prospects" (ER 81-10018) spelled out very neatly the rising Soviet concerns about energy resources, planning and management

deficiencies, and consumer welfare, all of which pointed to the need for a new growth strategy—one based upon intensive growth. The analysis of the futility implied by the “treadmill of reform” (Sov 82-10068) was right on the mark. Despite growing economic problems, no genuine economic reform was in fact taking place. Subsequent analyses, one (Sov 83-10093), based on a series of CIA industry studies that were particularly well chosen, provided a major contribution to our understanding of the causes and intractability of Soviet stagnation, a second (Sov 83-10202), provided an excellent interpretation of the problems posed by excess demand, forced saving and the way in which the Soviet leadership had become ensnared in its own economic illogic. These reports illustrate the very best in economic analysis and forecasting and compare favorably with the best academic analyses of the period.

Some analytic products do not fare as well in retrospect. The National Intelligence Estimate for 1982 (“The Soviet Challenge to U.S. Security Interests”), for example, portrays the U.S.S.R. as aggressively confronting the United States in the Third World and as prepared to maintain the growth of its defense establishment at all costs. The growing economic stresses and strains receive little recognition in the analysis. One report (Sov 84-10017) that did confront directly the larger implications of the slowing rate of economic growth proved to have been wrong in retrospect:

. . . [T]he period of continued low level of growth that we project through 1990 should not be taken as a harbinger of economic collapse. . . . It [is] more accurate [to say that] our projection depicts a difficult and stressful period for a large, if inefficient, economy.”

Academic specialists were not noticeably better in interpreting the ultimate consequences of the growth slowdown. But it is important to note also that the essence of this report is still informative: that a stressful period is being entered. Most students of the Soviet economy believed at that time that the Soviet economy would continue to “muddle through.”

Joseph Berliner, for example, explored four possible scenarios for economic change (Reactionary, Conservative, Radical and Liberal), and ended his contribution to *The Soviet Economy: Toward the Year 2000* (1983 edited by Levine and Bergson) with:

I conclude that the prospects for change in the system of planning and management depends upon the performance of the economy under the Conservative Model. If the growth rate should stabilize at a level that may be low but that nevertheless exceeds the incentive threshold,

that model will be retained and the century will limp quietly to its end. Chronic cases do not normally evoke extreme measures. Only acute attacks, like depressions or rebellions, galvanize a society into such measures. If the Conservative Model cannot stabilize the growth rate even at that low level, the accumulation of social and political pressures will propel the leadership into either the Reactionary or the Liberal Model. Both are likely to improve the performance of the economy, but the greater potential lies with the latter. If the counsels of political prudence prevail, however, the lot will fall to the former.

Berliner's look into the future is more satisfying than the previous forecast because it is based upon alternative scenarios, but it still missed including the actual outcome because there was none that assumed the collapse of the Communist party. The Radical Model was a model of market socialism, not the repudiation of socialism.

Seweryn Bialer in the same volume concluded: "In sum, we can anticipate no fundamental changes in the Soviet Union during the 1980s despite intense and divisive discussions concerning economic reforms, a number of organizational policy initiatives, experimentation with the economic structure, and significant political conflict." Bialer and Joan Afferica argued in *Foreign Affairs* at about the same time (Winter 1982/83) against the notion that the U.S. had acquired a degree of leverage over domestic Soviet developments because of the deterioration of the economy. They declared this a "worst case" analysis:

That severe economic stress will provoke political collapse may be a possible outcome in the next decade, but it is nonetheless an unlikely one. What generations have wrought with so much sacrifice, cruelty and conviction will not change radically under pressures of economic decline or leadership instability. The Soviet Union is not now nor will it be during the next decade in the throes of a true economic crisis, for it boasts enormous unused reserves of political and social stability that suffice to endure the deepest difficulties. The Soviet economy, like any gigantic economy administered by intelligent and trained professionals, will not go bankrupt. It may become less effective, it may stagnate, it may even experience an absolute decline for a year or two; but, like the political system, it will not collapse.

And Bialer was of essentially the same opinion three years later in *The Soviet Paradox, External Expansion, Internal Decline* (1986).

Analyzing the circumstances facing the Andropov regime, Walter Laqueur ("What We Know About the Soviet Union," *Commentary*, 1983) conceded the seriousness of the political and economic problems, but he argued that "a modern dictatorship has powerful instruments with which to assuage, to suppress protest, to postpone the day of reckoning for a very long time." Although he granted the existence of an economic crisis, he dismissed it as a possible cause of fundamental change in the Soviet system: "The long and short of it is that the Soviet economy will muddle through."

Richard Pipes (in *Survival Is Not Enough*, 1984) also failed to entertain the possibility that the party and economic bureaucracy might be completely dismantled. He cited Chalidze and Djilas approvingly "That reforms are conceivable only as a result of major internal and external setbacks, that they will come about only when the *nomenklatura* concludes that they are the price it must pay for its survival." Pipes himself considered and discussed only "what kind of reform can one expect from the Soviet leadership?" Even this was a low probability outcome in his view. How much more so must have been the actual course of Soviet history since 1988.

Our purpose is not to single out individuals for criticism, but to document our contention that highly qualified academic scholars shared with those who worked for SOVA an assumption that the Soviet Union, despite its visible problems, remained fundamentally sound in the early and middle 1980s. Many other scholars could be cited in support of this thesis. The review committee's criticism of the work of SOVA in this connection is not for failing to see what essentially no one saw, but for its occasional failure to present its speculations in the form of explicit alternative scenarios with probabilities attached to each.

One SOVA report (Sov 84-10104) was particularly categorical in dismissing the possibility of radical change in the Soviet Union, and it may indeed have generated some of the criticism the CIA has received for its reports on the Soviet economy. The authors conclude that:

[T]he chances are low that, by 1990, the growth slowdown will precipitate . . . unrest . . . or compel [a] shift to a decentralized socialist market economy. . . . The slowdown is not likely to lead Moscow to forgo major weapons programs. . . . [N]or is it likely to substantially increase economically based Western political leverage, [or] drive the leadership to accept arms control agreements. . . .

In conclusion, the report states that the "chances are low" that the economic slowdown will:

- Precipitate . . . widespread popular unrest in the U.S.S.R.
- Pave the way for either significant liberalization or a Polish-style militarization of the regime.
- Bring to power a leadership group with significantly different foreign policy aims.

The authors also conclude that “Moscow’s economic problems, while serious and intractable, do not threaten the continued existence of the Communist political system.”

Two years later, another SOVA report (Sov 86-10017X) provided a similarly conservative view of possible changes in the Soviet social system, but it was more successful in considering the alternatives. Like most Western analysts outside the U.S. Government, the authors concluded that major systemic change was unlikely. Rather, what was expected was “vigorous reform,” a slight increase in legal private activity, a shift in the balance of domestic political power to the KGB and an expanded role for the party. Overall, they concluded: “we expect that Gorbachev’s political position will remain strong and the U.S.S.R. . . . is likely to see some improvement in system performance over the next few years.” More radical reform (a “new NEP”) was rated a low probability scenario because it would be “risky and controversial.” A move toward greater repression was viewed as of low probability also and would result only out of leadership “desperation.” Most probably was a “No surprise-free future,” that is, “further unconventional leadership changes and surprises appear probable.” We consider this a model report under the circumstances of uncertainty that prevailed at the time it was prepared. It is not only informative, it also pointed in the correct direction and represents a good forecast.

In 1987, a NIE report appeared, entitled “Whither Gorbachev: Soviet Policy and Politics in the 1990s,” also a solid piece of work in our opinion. This was the first general assessment of *perestroika* and *glasnost*, and the report stated that they contained the “potential” to change the U.S.S.R. as radically as Stalin had done in his time. The main question was whether or not Gorbachev had, or could, concentrate sufficient power in his hands to do so. This was a very valuable and timely analysis. (Incidentally, the director of NSA dissented from this conclusion.) The report concludes that: the most likely outcome of the Gorbachev reforms would be the rejuvenation of the existing system; there was a small chance (perhaps 1 in 3) to effect true systemic reform; a neo-Stalinist outcome was even less likely; and “the odds of a turn toward democratic socialism, featuring a more radical push for a market economy and a pluralistic society will remain virtually nil under any circumstances.”

Finally, and significantly, the report concludes: "We believe he [Gorbachev] recognizes he is pursuing a potentially dangerous course but is determined to try—even at the risk of failure—rather than accept the status quo."

The review committee believes that this is as good a report as its clients can hope to receive about a society in flux. Even those American scholars who were forecasting "gloom and doom" for the Soviet economy were not more accurate in their appraisals. Marshall Goldman, for example, in *Gorbachev's Challenge* (1987), was dubious about the likelihood of success of Gorbachev's early reforms, anticipating "improvements and improved productivity, but not the breakthrough Gorbachev seems eager to achieve." Goldman expected the Soviet leadership to continue to "experiment," and he speculated that "It is conceivable that the Soviets will adopt the Chinese approach, but it does not seem likely. Instead, the Soviet Union will probably continue to look to East Germany as a model of reform, making a marginal and even radical change here and there, and to operate much as it did in past periods of reform." After considering the possibility of radical reform, Goldman decided that:

The odds are that, given the resistance his reforms will face, and the risks a really radical reform entails, he [Gorbachev] will opt for the more conservative route.

Short of some unexpected catastrophe, the Soviet economy is unlikely to come close to collapse, but without some equally unexpected transformation neither is it likely to improve its standing among the world's economic leaders. In the end, Gorbachev, like his predecessors, will probably have to settle for an economy that has to rely more on its natural riches than on its creative potential.

Finally, as late as 1988, Ed Hewett (in *Reforming the Soviet Economy. Equality versus Efficiency*) considered a middle course of reform as the most likely. He ruled out as very low probability both his "success scenario," where "everything works as planned" and both qualitative and quantitative goals are met, and his "failure scenario," which is essentially a "muddling through" outcome, not a collapse. The remaining alternatives, "high growth" and "high quality," appear to have been equally probable in Hewett's view. Thus, even at this late date so perceptive a student of the Soviet economy as Ed Hewett was still working within the old framework of analysis, one essentially the same as Gertrude Schroeder's in the "treadmill of reform."

We conclude, therefore, that the CIA's interpretive reporting was at least as good as any competitor. There were some notable successes, and some notable misses, but overall the CIA's reports have been of high quality, timely and useful to policy makers. We believe it would be unreasonable to expect otherwise unless CIA analysts were privy to critical secret sources. This does not appear to have been the case.

The CIA's assessment in the early 1980s, which was shared by the scholarly community generally, was that there was a very "low probability" that the system would collapse from popular unrest or from internal strains. Subsequent events have not proven that assessment to have been wrong, contrary to what many critics now assert. The system in fact did not collapse from internal strains and there was no public unrest. It collapsed for another reason that no one foresaw; namely, the cumulative sequence of events that culminated in the dissolution of the Party by the very man who had been elected five years earlier to lead the Party and had no intention at that time of contributing to its dissolution.

The profession did identify the more probable outcomes, like "muddling down," and some of the less probable outcomes, like the adoption of market socialism. But it did not foresee the possibility of one particular outcome, that the Party would be destroyed by the hand of the Party leader himself. In that sense the whole profession failed.

Had that scenario been put forward for consideration, it would no doubt have been generally considered as of extremely low probability, and properly so. Low-probability events do occur, however, and the occurrence of such an event does not signify that those who had judged that event to be improbable were wrong. Prophets are expected to foresee the most improbable events, but social scientists do not have that power, should not be expected to have that power, and should be criticized when they claim to have that power. Good social science may be wrong, but it should be wrong for the right reasons. Only prophets should never be wrong.

Notes

1. Members of the Review Committee, brought together at CIA Headquarters in Langley, Virginia on July 26, 1991, by John Helgerson, Deputy Director for Intelligence, were briefed by George Kolt, John Helgerson and Judge William Webster on the instruction from the House Permanent Select Committee on Intelligence (HPSCI) to form a review panel. Public criticism, notably by Senator Moynihan and several prominent columnists, of the CIA's assessment of Soviet economic and military capabilities during the 1970s and 80s indicated a concern that the CIA may have exaggerated the size and rate of growth of the Soviet economy and the Soviet

military threat, thereby causing, among other things, unnecessary defense expenditures by the United States. Deputy Director Helgeson indicated that HPSCI wants to know whether or not the CIA's intelligence on the Soviet economy was "reasonable, timely and rang the gongs appropriately." The committee was instructed to evaluate the appropriate materials and to deliver its report in November, 1991.

2. The assumptions underlying this model are outlined in "SOVSIM: A Model of the Soviet Economy" (ER 79-10001).

3. A 1979 paper, "Simulations of Soviet Economic Growth Until 1989" (ER 79-10131), for example, used SOVSIM to examine the impact of forecasted labor and energy shortages in the 1980s.

4. There were non-econometric analyses of growth problems conducted by SOVA during the Brezhnev era that were particularly useful and should be continued and perhaps expanded. The analysis by Gertrude Schroeder (a SOVA consultant), in "The Slowdown in Soviet Industry 1976-1982" (published subsequently in SOVIET ECONOMY), is an excellent example of the type and level of work we believe should be encouraged.

5. The basic methodology for estimating the machinery component of Soviet and U.S. investments is spelled out, for example, in "U.S.S.R. and the U.S. Price Ratios for Machinery, 1967-1972," Vol. I (ER 80-10410).

6. According to "A Comparison of Soviet and U.S. GNPs 1960-83" (Sov 84-10114), the Soviet economy gained on the U.S. between 1960 and 1975, rising from 49 to 58% (as a geometric average). It then declined to 55% between 1975 and 1983.

7. An instance that confirms our concern was the 1976 revision of the burden estimate, on the basis of new information about Soviet prices, from 6-8% of GNP to 11-13%. If an estimate can be off by almost 100% without any reliable independent evidence that it was so far off, one cannot have much confidence in the estimating procedure. Unfortunately, attempts to develop an independent estimate of defense expenditure have apparently not yielded sufficiently sensitive alternatives.

8. In our opinion, this is an example of SOVA's failure to do "a better job of explaining, documenting and qualifying the estimates," as it was enjoined to do by the 1983 Working Group on Soviet Military Economic Analysis.